RESEARCH AND DEVELOPMENT IN THE 1999 BUDGET: AN OVERVIEW

INTRODUCTION

This report presents information on Federal proposed fiscal year (FY) 1999 budget authority for the research and development (R&D) components of agency programs. The data were submitted by Federal agencies to the Office of Management and Budget in early 1998. This report documents historical data not affected by current legislation and therefore can be used for tracking funding trends. The report also provides detailed data on Federal R&D authorizations not readily available from other sources.

TOTAL R&D

In the first half of 1998, the administration proposed total budget authority of $75 billion for FY 1999 for all Federal R&D programs, an increase of 2 percent from the estimated 1998 R&D total of $74 billion (table 1). After adjusting for expected inflation, proposed R&D budget authority will stay the same as the FY 1998 level. Budget authority for R&D grew 3 percent between FY 1997 and FY 1998 (an increase of 1 percent in constant dollars).

The largest 1999 R&D increase ($1 billion) is slated for health (budget function code 550), which mostly includes health programs of the National Institutes of Health (NIH).

Among individual functions, the largest FY 1999 R&D decrease ($0.2 billion) is slated for space research and technology (budget function code 252), which includes space programs of the National Aeronautics and Space Administration (NASA).

The administration proposed more than half (53 percent) of its FY 1999 R&D budget authority for defense (budget function code 050), which includes military programs of the Department of Defense (DoD) and the atomic energy defense activities of the Department of Energy (DOE). Proposed defense-related R&D funding is $39.7 billion in FY 1999, a slight decrease from the preliminary 1998 level of $39.9 billion. This proposed decrease reverses the rise of nearly 1 percent in budget authority for defense-related R&D between FYs 1997–98. However, R&D funding within the national defense function has continued to decrease in real terms since 1993 (with the exception of a 2.5-percent increase between FYs 1996–97). The proportion of R&D funds proposed for defense-related activities has declined from 59 percent in FY 1993 to 53 percent in FY 1999.

The proposed real decrease in defense-related R&D budget authority is offset by an increase in proposed funding of civilian R&D in FY 1999. Nondefense R&D funding is anticipated to grow by about 5 percent to $35.5 billion in FY 1999 (3 percent in constant dollars). Civilian-related activities represent 47 percent of Federal funding for the conduct of R&D.

The five largest budget functions with respect to R&D expenditures—national defense, health, space research and technology, general science, and natural resources and environment—together account for 92 percent of all proposed Federal R&D funding. The health and general science functions are expected to receive increased funding for R&D in FY 1999. Highlights of proposed R&D funding by function in the FY 1999 budget follow.

- National defense R&D funding (function 050) is expected to drop by $0.2 billion (down 0.4 percent) below the FY 1998 level. Army would experience a decrease in funding, losing 5 percent (a drop of $0.2 billion) of its research, development, test, and evaluation (RDT&E) funds. Air Force RDT&E would decline 3 percent, from $14 billion in FY 1998 to $13.6 billion in FY 1999. Among the defense agencies, the Ballistic Missile Defense Organization (BMDO) funding is expected to decline 3 percent between FYs 1998–99. However, the Defense Advanced Research Projects Agency (DARPA) expects to stay at its FY 1998 level. Only one of DOE's defense-related R&D programs will gain funding over its FY 1998 level—weapons activities, up 19.5 percent. Weapons activities includes funding from the stockpile stewardship and stockpile management accounts. DOE plans to decrease funding for naval reactors development by 1 percent, to $0.6 billion. Its environmental restoration and waste management programs are to decrease by 37 percent, to $0.1 billion in FY 1999. DOE's other defense-related R&D programs are expected to get nearly the same funding as in FY 1998.

- The administration proposes an 8-percent increase ($1 billion) in health-related R&D (function 550) to $15 billion in FY 1999. Most of this proposed growth is for the basic and applied biomedical and behavioral research programs of NIH, which will account for 95 percent of all Federal health R&D. R&D programs for all except one component of NIH will receive greater support in FY 1999 than in FY 1998.

  Funding for NIH's Office of the Director is expected to fall 17 percent. The Office of the Director provides support to the Women's Health Initiative and other research activities. More than $2 billion is proposed for R&D projects at the National Cancer Institute. Also, $1.7 billion is proposed for R&D on AIDS/HIV within the Office of AIDS Research, and $1.6 billion is slated for R&D programs at the National Heart, Lung, and Blood Institute. The National Institute of Diabetes and Digestive and Kidney Diseases expects to receive a 7-percent increase (up $62 million) over FY 1998. The National Institute of Neurological Disorders and Stroke expects an 8-percent increase (up $58 million) over FY 1998.

Table 1. Federal R&D budget authority, by budget function: fiscal years 1997-99

1999 rank	Budget function	1997 actual	1998 preliminary	1999 proposed	Percent change 1997-98	Percent change 1998-99
		[In millions of dollars]				
	Total	71,653	73,639	75,229	2.8	2.2
1	National defense	39,591	39,871	39,699	0.7	-0.4
2	Health	12,670	13,557	14,622	7.0	7.9
3	Space research and technology	7,844	8,265	8,037	5.4	-2.8
4	General science 1/	2,944	4,210	4,649	43.0	10.4
5	Natural resources and environment	1,886	2,015	2,013	6.8	-0.1
6	Transportation	1,785	1,920	1,904	7.5	-0.8
7	Energy 1/	2,372	1,143	1,470	-51.8	28.6
8	Agriculture	1,203	1,243	1,272	3.3	2.3
9	Commerce and housing credit	409	385	465	-5.7	20.7
10	Education, training, employment, and social services	373	437	454	17.2	3.9
11	Veterans benefits and services	267	276	304	3.4	10.1
12	International affairs	190	171	175	-10.0	2.3
13	Administration of justice	59	76	71	28.8	-6.6
14	Community and regional development	48	49	62	2.1	26.5
15	Income security	9	19	30	111.1	57.9
16	General government	2	2	2	0.0	0.0

1/ Beginning in FY 1998, a number of DOE programs were reclassified from energy (270) to general science (251).

KEY: NA = Not applicable

NOTES: Because of rounding, components may not add to the totals shown. Percentage change is derived from unrounded data.

SOURCE: Agencies' submissions to Office of Management and Budget, MAX Schedule C; agency budget justification documents; and supplemental data obtained from the agencies' budget offices.

- R&D budget authority for space research and technology activities (subfunction 252) of NASA is expected to decrease nearly 3 percent below the FY 1998 funding level. It will decrease by $0.2 billion, to $8 billion. NASA expects to fund its largest program, space station research, at 2 percent below the FY 1998 level. NASA also plans to decrease R&D funding for its space transportation technology program (down 4 percent) and for its mission communication services (down 6.5 percent to $0.4 billion). The space science program, NASA's second largest R&D account, is expected to receive $2.3 billion, up 1 percent from FY l998. Decreases are scheduled for R&D activities for earth science (formerly the Mission to Planet Earth program) which will receive a decrease of $41 million (down 3 percent), to $1.5 billion in FY 1999. The administration also proposes that NASA receive increases for life and microgravity sciences, increasing $23 million from the FY 1998 level.

- Research funding for general science (subfunction 251) in FY 1998 is 43 percent above (an increase of more than $1 billion) the FY 1997 level because a number of DOE programs were reclassified from energy R&D (function 270) to general science R&D. However, research funding for general science is expected to increase by 10 percent, or $0.4 billion in FY 1999, to nearly $5 billion. It would account for 6 percent of the total Federal R&D budget authority. Had DOE not changed its appropriation account structure, general science research funding would have increased by $380 million in FY 1999, up 12 percent from a smaller FY 1998 base. Almost 60 percent of the general science dollars are slated for the National Science Foundation (NSF); the remaining funds are for DOE general science programs. All NSF programs are expected to gain funding, ranging from 6–20 percent over their FY 1998 levels. NSF expects to increase research funding for mathematical and physical sciences (NSF's largest research program) by $76 million or 11 percent above the FY 1998 level. Also, NSF proposes to direct $50 million more toward geosciences research (NSF's second largest research program), up 12 percent.

  DOE's research budget is expected to grow 8 percent with increases in nuclear physics (up $51 million or 22 percent above the FY 1998 level), basic energy sciences (up $45 million or 7 percent), high energy physics programs (up $31 million or 6 percent), and computational and technology research (up $11 million or 8 percent).

- Natural resources and the environment R&D funding (function 300) is expected to stay at the FY 1998 level of $2 billion in FY 1999. It will comprise nearly 3 percent of the total Federal R&D budget authority. Within this functional category, the largest share ($0.6 billion, comprising 32 percent of the R&D funding for natural resources and the environment) is proposed for the Environmental Protection Agency's (EPA's) pollution control and abatement efforts. Nearly all of EPA's R&D funding for pollution control and abatement is for EPA's science and technology activities, which include budget authority for R&D transferred from EPA's Superfund account.

  The National Oceanic and Atmospheric Administration (NOAA) plans to decrease its natural resources initiatives by 5 percent from $543 million in FY 1998 to $518 million in FY 1999. NOAA's natural resources initiatives include NOAA's oceanic and atmospheric research programs and initiatives.

- Transportation R&D funding (function 400) is expected to decrease by 1 percent to $1.9 billion in FY 1999. Transportation R&D will comprise 2.5 percent of total Federal R&D budget authority. Three-fourths of the transportation R&D funding is slated for air transportation research mostly by NASA for aeronautical research and technology. Funding for ground transportation (supported entirely by the Department of Transportation) will account for 21 percent of the total transportation R&D.

- A 29-percent increase (up $0.3 billion) is proposed for energy R&D (function 270) to $1.5 billion in FY 1999, even with several programs in energy supply being reclassified in FY 1998 to the general science function. Energy R&D will comprise 2 percent of total Federal R&D budget authority. The increase in energy funding is due largely to more support for the fossil energy programs (specifically for the petroleum, coal, and gas program) and for the energy supply activities. DOE expects to cancel $40 million in unspent, previously appropriated funds for its clean coal technology program under the fossil energy account in FY 1999. However, the increase in funding for DOE's energy supply programs is attributable to greater support for the solar and renewable energy account, an increase of $88 million, and nuclear energy programs, an increase of $69 million. The Tennessee Valley Authority is expected to get $2 million less than its FY 1998 funding level, an 8-percent decrease. The Nuclear Regulatory Commission expects to receive $8 million less than it did in FY 1998, down 13 percent.

- Funding for agricultural R&D (function 350) is expected to increase in FY 1999 by 2 percent to $1.3 billion, and would account for under 2 percent of the total Federal R&D budget authority. Nearly 60 percent of the Department of Agriculture's (USDA's) R&D funding is for the Agricultural Research Service (ARS), an intramural research agency with primary responsibility for providing initiative and leadership in agricultural research. Several initiatives, including the research on plant sciences, commodity conversion and delivery, and animal sciences, are funded by ARS. The ARS has 101 research locations throughout the United States and abroad. Another USDA program, the National Research Initiative (NRI), is expected to increase 34 percent to $130 million in FY 1999. NRI programs support research on integrated pest management, biological control of pests and diseases, human nutrition, plant genome, water quality, food safety, sustainable agriculture, and agricultural systems.

- The remaining eight functions each have less than $0.5 billion in proposed FY 1999 R&D budget authority. However, overall R&D for these functions is expected to increase by more than 10 percent ($148 million) to $1.6 billion. The main areas of this growth are in commerce and housing credit (up $80 million); veterans benefits and services (up $28 million); and education, training, employment, and social services (up $17 million).

  – R&D funding for commerce and housing credit (function 370) is expected to increase by 21 percent ($80 million) to nearly $0.5 billion. This total reflects increased support for the Advanced Technology Program (ATP) funded at the National Institute of Standards and Technology (NIST). NIST expects to increase ATP funding by 40 percent, $68 million above the FY 1998 level. ATP funds precompetitive R&D on commercial technologies on a cost-shared basis through a competitive process. Funding for research and general education programs (subfunctions 501-3) of the Department of Education and Smithsonian Institution is expected to increase by 23 percent ($58 million) to $312 million.

  – The administration proposes to increase funds for international affairs (function 150) by 2 percent, to $175 million in FY 1999. This increase is due mainly to additional funding of the global programs in the Agency for International Development (AID). AID supports programs in four areas: population and health, broad-based economic growth, environment, and democracy.

  – Funding for administration of justice (function 750) of the Departments of Justice and Treasury is expected to decrease by 7 percent to $71 million in FY 1999. This decrease is due mainly to an 8-percent drop in R&D funding at the Office of Justice Programs (OJP) in the Department of Justice. OJP provides Federal leadership, coordination, and assistance needed to make the Nation's justice system more efficient and effective in preventing and controlling crime.

  – A 10-percent increase (to $300 million) is slated for veterans benefits and services (function 700), due to increased funding of the medical and prosthetic research programs in the Department of Veterans Affairs. R&D funding is also expected to increase 26.5 percent (to $62 million) in community and regional development (function 450) because of the Department of Housing and Urban Development's increased R&D funding. Funding for income security (function 600) is expected to increase 60 percent to $30 million in FY 1999. R&D funding is expected to stay at the FY 1998 level for general government (800), which includes $2 million for engraving and printing activities supported by the Department of Treasury.

Distribution of Total R&D Budget Authority Among Functions

The five largest R&D functions in FY 1999—defense, health, space research and technology, general science, and natural resources and the environment—account for 92 percent of all proposed Federal R&D budget authority. Transportation, energy, and agriculture each account for between 1 and 3 percent of Federal funding of R&D. The remaining eight functions each account for less than 1 percent of the total 1999 proposed R&D budget authority (table 2).

During the early and mid-1980s, practically all growth in Federal R&D support was defense-related (figure 1). Since FY 1986, however, defense R&D has dropped significantly from its peak 69-percent share of the Federal total to the proposed 53-percent share for 1999 (table 3). Despite this decline, defense is expected to receive more

than two and one half times the budget authority for R&D than the next largest function, health.

Proportions of only four functions of the total R&D budget authority are expected to be notably larger in 1999 than in 1998—health (18.4 percent of the total R&D budget authority in FY 1998 and 19.4 percent of the total R&D budget authority in FY 1999); general science (5.7 percent in FY 1998 and 6.2 percent in FY 1999); energy (1.6 percent in FY 1998 and 2.0 percent in FY 1999); and commerce and housing credit (0.5 percent in FY 1998 and 0.6 percent in FY 1999). Proportions for natural resources and the environment; agriculture; education, training, employment, and social services; international affairs; veterans benefits and services; community and regional development; administration of justice; income security; and general government are expected to stay approximately the same as in 1998. Based on the administration's budget proposal, proportions of three functions would drop notably in FY 1999—defense (54.1 percent of the total budget authority in FY 1998 and 52.8 percent of total budget authority in FY 1999), space research and technology (11.2 percent in FY 1998 and 10.7 percent in FY 1999), and transportation (2.6 percent in FY 1998 and 2.5 percent in FY 1999).

BASIC RESEARCH

The administration proposes to increase budget authority for basic research by 7.7 percent in FY 1999 to $17 billion (table 4). When adjusted for expected inflation, this would be about a 6-percent increase from the estimated FY 1998 level. The basic research share of total R&D budget authority has slowly increased from 15 percent in FY 1986 to the proposed 22 percent in FY 1999 (figure 2).

Table 2. Distribution of total Federal R&D budget authority, by function: fiscal years 1997-99

[In percentages]

1999 rank	Budget function	1997 actual	1998 preliminary	1999 proposed
	Total	100.0	100.0	100.0
1	National defense	55.3	54.1	52.8
2	Health	17.7	18.4	19.4
3	Space research and technology	10.9	11.2	10.7
4	General science 1/	4.1	5.7	6.2
5	Natural resources and environment	2.6	2.7	2.7
6	Transportation	2.5	2.6	2.5
7	Energy 1/	3.3	1.6	2.0
8	Agriculture	1.7	1.7	1.7
9	Commerce and housing credit	0.6	0.5	0.6
10	Education, training, employment, and social services	0.5	0.6	0.6
11	Veterans benefits and services	0.4	0.4	0.4
12	International affairs	0.3	0.2	0.2
13	Administration of justice	0.1	0.1	0.1
14	Community and regional development	0.1	0.1	0.1
15	Income security	2/	2/	2/
16	General government	2/	2/	2/

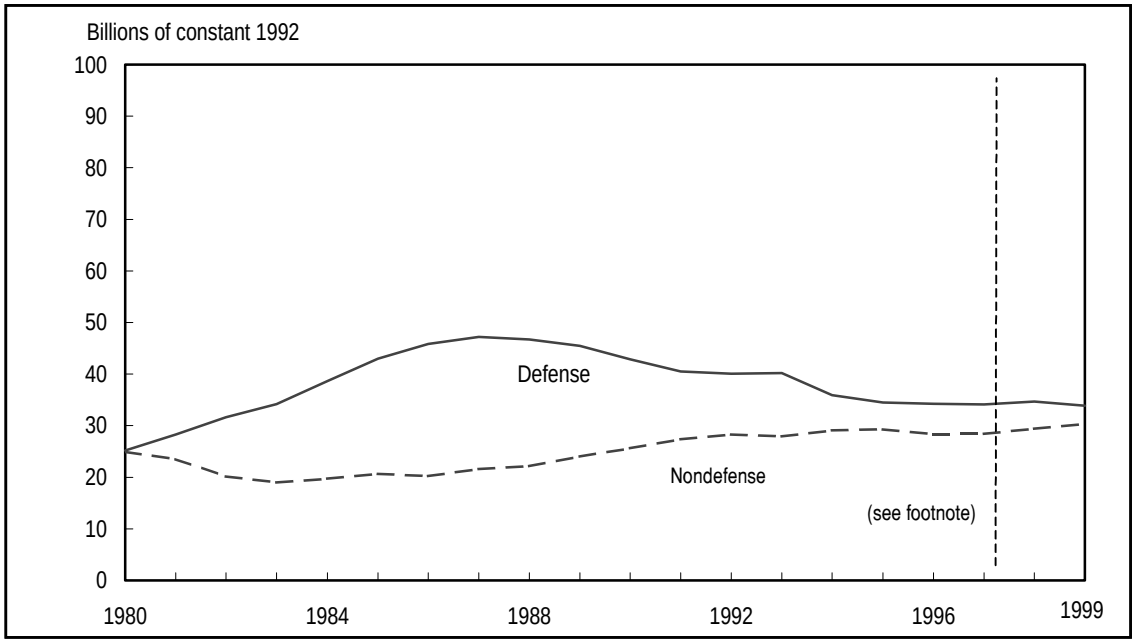
1/ Beginning in FY 1998, a number of DOE programs were reclassified from energy (270) to general science

2/ Less than one-tenth of one percent.

NOTE: Because of rounding, components may not add to totals.

SOURCE: Agencies' submissions to Office of Management and Budget, MAX Schedule C; agency budget justification documents; and supplemental data obtained from the agencies' budget offi

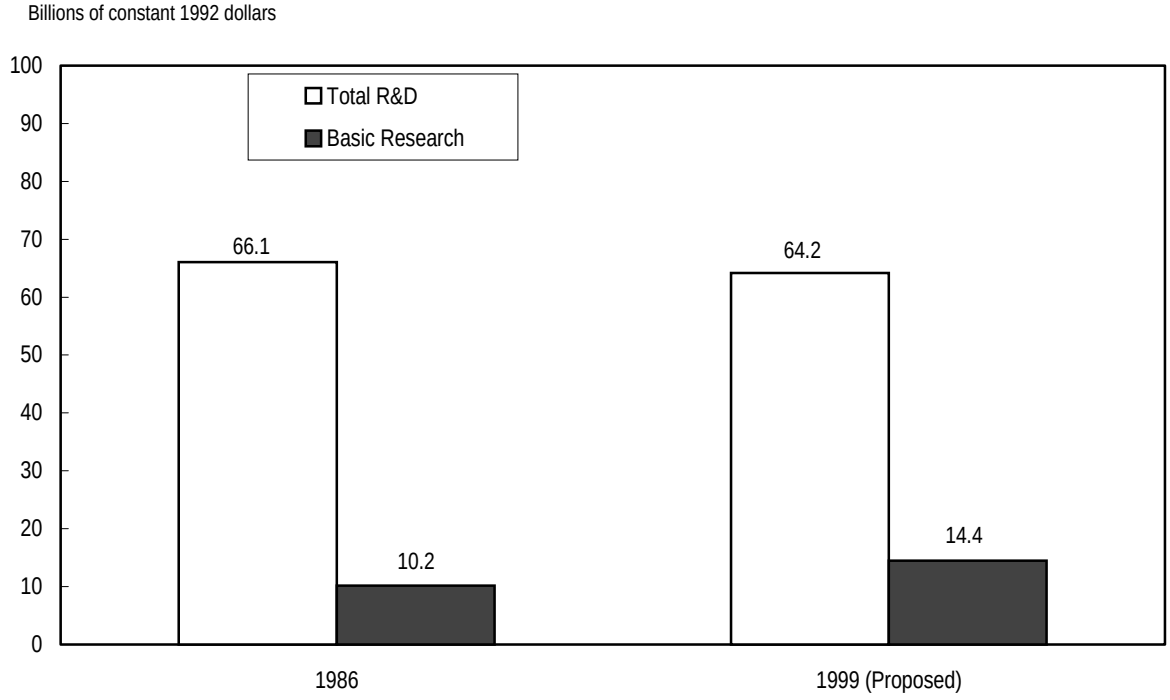
Figure 1. Federal budget authority for defense and nondefense R&D: fiscal years 1980-99[1]



[1]1998 numbers are preliminary; 1999 numbers are proposed.

SOURCE: Agencies' submissions to the Office of Management and Budget, Circular No. A-11, Max Schedule C, "Research and Development Activities;" agency budget justification document; and supplemental data obtained from the agencies' budget offices.

Figure 2. Federal budget authority for basic research compared with total R&D budget authority: fiscal years 1986 and 1999



SOURCE: Agencies' submissions to the Office of Management and Budget, Circular No. A-11, Max Schedule C, "Research and Development Activities;" agency budget justification documents; and supplemental data obtained from the agencies' budget offices.

Table 3. Federally funded R&D for national defense and civilian functions: fiscal years 1955-99

Fiscal Year	Current dollars			Constant 1992 dollars 1/			Percent of total	
	Total	National defense	Civilian functions	Total	National defense	Civilian functions	National defense	Civilian functions
	[In millions of dollars]							
1955	2,533	2,151	382	12,266	10,416	1,850	84.9	15.1
1956	2,988	2,535	453	14,081	11,946	2,135	84.8	15.2
1957	3,932	3,327	605	17,865	15,116	2,749	84.6	15.4
1958	4,570	3,801	769	20,239	16,833	3,406	83.2	16.8
1959	6,694	5,556	1,138	29,079	24,136	4,944	83.0	17.0
1960	7,552	6,107	1,445	32,510	26,289	6,220	80.9	19.1
1961	9,059	7,005	2,054	38,434	29,720	8,714	77.3	22.7
1962	10,290	7,238	3,052	43,163	30,361	12,802	70.3	29.7
1963	12,495	7,764	4,731	51,803	32,189	19,614	62.1	37.9
1964	14,225	7,829	6,396	58,180	32,020	26,160	55.0	45.0
1965	14,614	7,342	7,272	58,785	29,533	29,252	50.2	49.8
1966	15,320	7,536	7,784	60,244	29,634	30,610	49.2	50.8
1967	16,529	8,566	7,963	63,016	32,657	30,358	51.8	48.2
1968	15,921	8,275	7,646	58,469	30,389	28,079	52.0	48.0
1969	15,641	8,356	7,285	55,016	29,391	25,624	53.4	46.6
1970	15,339	7,981	7,358	51,250	26,666	24,584	52.0	48.0
1971	15,543	8,110	7,433	49,390	25,771	23,619	52.2	47.8
1972	16,496	8,902	7,594	50,033	27,000	23,033	54.0	46.0
1973	16,800	9,002	7,798	48,809	26,153	22,655	53.6	46.4
1974	17,410	9,016	8,394	47,169	24,427	22,742	51.8	48.2
1975	19,039	9,679	9,360	46,767	23,775	22,992	50.8	49.2
1976	20,780	10,430	10,350	47,606	23,895	23,711	50.2	49.8
1977	23,450	11,864	11,586	49,925	25,259	24,667	50.6	49.4
1978	25,976	12,899	13,077	51,663	25,654	26,008	49.7	50.3
1979	28,208	13,791	14,417	51,815	25,332	26,482	48.9	51.1
1980	29,739	14,946	14,793	50,167	25,213	24,954	50.3	49.7
1981	33,735	18,413	15,322	51,804	28,275	23,529	54.6	45.4
1982	36,115	22,070	14,045	51,800	31,655	20,145	61.1	38.9
1983	38,768	24,936	13,832	53,151	34,187	18,964	64.3	35.7
1984	44,214	29,287	14,927	58,361	38,658	19,703	66.2	33.8
1985	49,887	33,698	16,189	63,656	42,999	20,657	67.5	32.5
1986	53,249	36,926	16,323	66,066	45,814	20,252	69.3	30.7
1987	57,069	39,152	17,917	68,816	47,211	21,605	68.6	31.4
1988	59,106	40,099	19,007	68,880	46,730	22,150	67.8	32.2
1989	62,115	40,665	21,450	69,449	45,466	23,983	65.5	34.5
1990	63,781	39,925	23,856	68,471	42,861	25,610	62.6	37.4
1991	65,898	39,328	26,570	67,831	40,482	27,349	59.7	40.3
1992	68,398	40,083	28,315	68,398	40,083	28,315	58.6	41.4
1993	69,884	41,249	28,635	68,087	40,188	27,898	59.0	41.0
1994	68,331	37,764	30,566	65,003	35,925	29,078	55.3	44.7
1995	68,791	37,204	31,587	63,802	34,505	29,296	54.1	45.9
1996	69,049	37,801	31,248	62,596	34,268	28,327	54.7	45.3
1997	71,653	39,591	32,062	63,556	35,117	28,439	55.3	44.7
1998	73,639	39,871	33,768	64,101	34,707	29,394	54.1	45.9
1999	75,229	39,699	35,530	64,199	33,879	30,321	52.8	47.2

1/ Calculated using fiscal year GDP implicit price deflators with 1992 as the base year.

NOTES: The national defense function includes Department of Defense's military activities and Department of Energy's atomic energy defense programs. Civilian functions include all other federally funded R&D activities. Data for 1955-77 are obligations. Data for 1978-97 are actual budget authority. Data for 1998 are preliminary estimates of budget authority. Data for 1999 are budget authority proposed by the administration.

SOURCE: Agencies' submissions to Office of Management and Budget, MAX Schedule C; agency budget justification documents; and supplemental data obta from the agencies' budget offices.

Table 4. Federal budget authority for basic research, by budget function: fiscal years 1997-99

1999 rank	Budget function	1997 actual	1998 preliminary	1999 proposed	Percent change	
					1997-98	1998-99
		[In millions of dollars]				
	Total	14,961	15,710	16,917	5.0	7.7
4	National defense	1,090	1,099	1,155	0.8	5.0
1	Health	6,852	7,361	7,978	7.4	8.4
3	Space research and technology	1,653	1,658	1,697	0.3	2.3
2	General science 1/	2,753	3,944	4,367	43.3	10.7
7	Energy 1/	1,288	257	269	-80.1	4.8
6	Transportation	420	459	468	9.4	2.0
8	Natural resources and environment	153	156	164	2.3	5.0
5	Agriculture	548	560	589	2.2	5.3
10	Commerce and housing credit	34	34	37	0.2	9.1
9	Education, training, employment, and social services	142	148	157	4.2	6.1
13	International affairs	2	1	1	-50.0	0.0
12	Veterans benefits and services	14	14	15	0.0	7.1
14	Community and regional development	0	0	0	NA	NA
11	Administration of justice	13	19	20	46.2	5.3
15	Income security	0	0	0	NA	NA
16	General government	0	0	0	NA	NA

1/ Beginning in FY 1998, a number of DOE programs were reclassified from energy (270) to general science (251).

KEY: NA = Not applicable

NOTES: Because of rounding, components may not add to the totals shown. Percentage change is derived from unrounded data.

SOURCE: Agencies' submissions to Office of Management and Budget, MAX Schedule C; agency budget justification documents; and supplemental data obtained from the agencies' budget offices.

Four of the five largest R&D functions—defense, health, space research and technology, and general science—are also the largest basic research functions; they account for 90 percent of the basic research total (figure 3). Health ($8 billion) accounts for the largest share (47 percent) of the requested FY 1999 basic research total, followed by general science ($4 billion) and space research and technology ($1.7 billion). Defense accounts for $1.2 billion—or nearly 7 percent—of the proposed basic research total, but only 3 percent of the defense R&D total is basic research. (The basic research portion of the defense R&D total has remained at about 3 percent for the last eight years.) Of the nondefense R&D total, 44 percent is basic research.

R&D's Share of Total Budget Authority

R&D funding as a percentage of the total funding for functions in which R&D is conducted remains at about 8 percent (table 5). Since FY 1990, the percentage has fluctuated narrowly from a low of 7.6 percent in FY 1991 to a high of 8.2 percent in FY 1996. For functions that include R&D activities, only three (energy, general science, and space research and technology) are expected to be more than 60 percent of each function's total budget authority. (Energy R&D is greater than total energy budget authority because gross budget authority (spending) has been reduced by offsetting receipts, resulting in total net budget authority (spending minus receipts) that is less than R&D budget authority.) The R&D shares in the other functions range from a high of 15 percent for national defense to less than 0.1 percent for income security and general government.

Only five functions (health, energy, natural resources and environment, veterans benefits and services, and commerce and housing credit) will show an increased share of their budget authority directed toward R&D in FY 1999. The R&D shares of four functions (defense, space research and technology, transportation, and agriculture) are expected to drop; the remaining functions' R&D shares will each stay at the FY 1998 levels.

Table 5. Federal R&D budget authority as a percentage of each function's total budget authority: fiscal years 1997-99

1999 rank	Budget function	1997 actual	1998 preliminary	1999 proposed
	All functions conducting R&D	8.0	8.1	8.0
4	National defense	14.6	14.9	14.7
6	Health	9.7	10.0	10.5
3	Space research and technology	63.0	67.1	65.5
2	General science 1/	69.7	74.6	74.6
1	Energy 1/ 2/	139.1	-297.6	306.2
9	Transportation	4.3	4.5	4.4
7	Natural resources and environment	8.2	8.3	8.5
5	Agriculture	10.5	11.7	11.3
8	Commerce and housing credit	5.1	3.0	6.2
12	Education, training, employment, and social services	0.6	0.7	0.7
10	International affairs	1.3	1.0	1.0
11	Veterans benefits and services	0.7	0.6	0.7
13	Community & regional development	0.4	0.6	0.6
14	Administration of justice	0.2	0.3	0.3
15	Income security	3/	3/	3/
16	General government	3/	3/	3/

1/ Beginning in FY 1998, a number of DOE programs were reclassified from energy (270) to general science (251).

2/ R&D as percentage of total budget authority is greater than 100 percent because gross budget authority has been reduced by offsetting receipts, for total (net) budget authority that is less than R&D budget authority. In FY 1998, offsetting receipts exceeded gross budget authority.

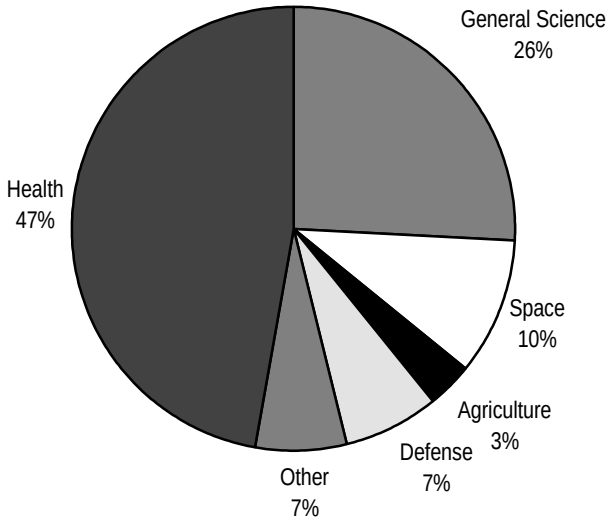
3/ Less than one-tenth of 1 percent

NOTE: Total budget authority includes discretionary and mandatory budget authority, less offsets.

SOURCE: Agencies' submissions to Office of Management and Budget MAX Schedule C; agency budget justification documents; supplemental data obtained from the agencies' budget offices; Offices of Office of Management and Budget, *Budget of the United States Government, Fiscal Year 1999* , Washington, DC: February, 1998 (Table 33-1).

Figure 3. Proposed Federal budget authority for basic research by budget function: fiscal year 1999

(In percentages)



SOURCE: Agencies' submissions to the Office of Management and Budget, Circular No. A-11, Max Schedule C, "Research and Development Activities;" agency budget justification documents; and supplemental data obtained from the agencies' budget offices.